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ABSTRACT

Coupled with poor infrastructure, vast distances, and harsh climatic conditions, the enormous physical obstacles in the Sudan (Africa's largest country) have combined to produce extremely serious problems for Sudanese children, who will soon constitute half of the 17 million people there. This booklet describes continuing projects implemented by UNICEF to address the Sudan's many basic problems. Topics described are (1) the situation of children, with emphasis on child mortality, malnutrition, preventable diseases, and universal primary education; (2) primary health care problems, programs, and goals, with a focus on community participation, prevention, and hygiene; (3) a clean water supply project involving the drilling of 1,400 wells; (4) the water project in Kadugli, South Kordofan, which included systems for filtering and purifying water; (5) educational assistance programs such as the Inservice Educational Training Institute, the Integrated Rural Education Centers, and special programs for women; (6) social services; (7) UNICEF transport and supply initiatives; and (8) plans for the future. Concluding remarks focus on the southern Sudan, the least developed part of this developing country, and indicate the scale of the problems that continue to exist. (RH)

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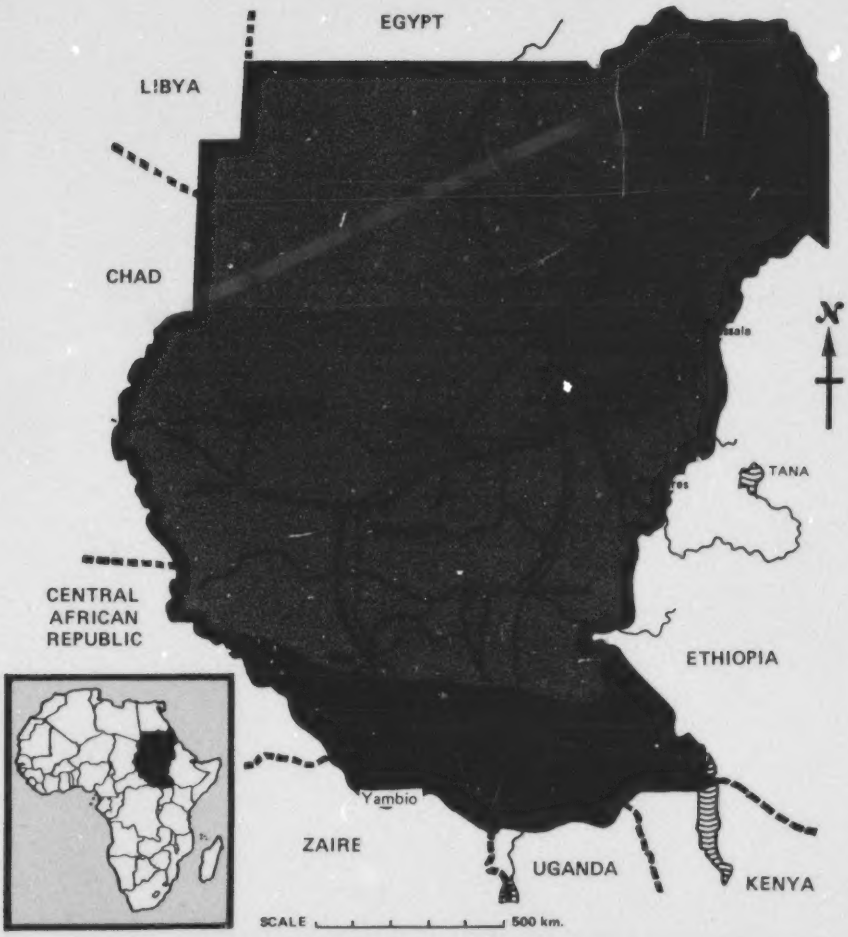
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CHILDREN OF THE SUDAN . . .

FOREWORD

Among the Rights of the Child enshrined in the United Nations Declaration on this subject is the proviso that each and every child in this world should have an equal opportunity in life, regardless of their place of birth, religion, or their families' status in society. It is, therefore, axiomatic that the child now growing up in the swamps of Bahr-el-Ghazal in the Southern Sudan should be able to look forward to the future with confidence, assured of security, sound in health and suitably educated for his or her role in society — just as children do from other parts of this globe.

True, that goal has yet to be realised and many obstacles still lie in the way of its full implementation, but those who formulate the policies of UNICEF constantly bear this in mind, together with the other goals set out in the Rights of the Child Declaration.

For years now UNICEF has given special attention in its programming to needs of those who are "the poorest of the poor". In this world, where, instead of narrowing, the gap between the affluent and the "have-nots" is constantly widening; those increasing most rapidly are unfortunately the "poorest of the poor" — and for most of them the standards of living, of health and of literacy are becoming lower and not higher.

In the Sudan, which has to contend with such adverse climatic and topographical conditions and is now struggling against severe economic difficulties, a large percentage of the population falls into the "poorest of the poor" category. It is for this reason that UNICEF has gone out of its way to provide assistance of a very special nature.

In co-operation with the Government, UNICEF is striving to attain a few seemingly simple goals and these dictate our programme strategy. These are (1) the steady reduction of the infant mortality rate regrettably still far too high, (2) adequate nutrition for every child, to give each an equal opportunity for global competition and (3) an educational programme which embodies all that is needed to equip the child for his or her productive role in future so that each can contribute materially to the country's progress, supplemented by a health delivery service reaching the remotest communities.

To achieve this last goal, the chief obstacle in the Sudan is the lack of sufficient clean water essential for good health, and so the provision of adequate safe water has been a priority task for UNICEF in the Sudan during the '70s — and will continue to be in the coming decade.

And because of the crucial and continuing needs of the "poorest of the poor", the classic catalytic approach adopted in many other developing countries — where aid is given on the understanding that within a few years the project will be taken over, staffed, administered and financed by the local government — cannot be applied in a country such as the Sudan.

In such cases assistance has to be given directly and over a longer period — and this is what UNICEF plans to do, with the continuing support of its enlightened donors.

June, 1980

Sudan Country Representative
UNICEF
Khartoum

INTRODUCTION

The Sudan is Africa's largest country. In an area of one million square miles (2.5 million sq kms) there is a population of 17 million, more than half of whom are under 20. Most of Sudan's people live along the Nile Valley and in the Khartoum-Omdurman urban complex. In the south, the people live in a more scattered pattern.

Climatic conditions are extremely harsh, ranging from high aridity in the far north to vast swampy regions in the south, where a rainy season lasting six or seven months immobilizes all land transport. Few roads are tarred and in the arid and semi-arid areas soft sand is a major hazard, while in the south, mud and widespread flooding render roads impassable for long periods. Temperatures rise as high as 45° C in some parts of the country and drought is a constant problem.

Although the country's rail network is the longest in Africa (4,784 kms), most of it is single track and unsuited for heavy loads because of the lack of stone ballast and its extreme vulnerability to washaways during the rainy season. Road transport services are operated by a varied assortment of ageing vehicles, supplemented by a few newer trucks and buses. Sudan Airways operates an internal service to 16 towns.

The only seaport is at Port Sudan on the Red Sea and this causes a major supply bottleneck, not only in loading and unloading ships, but in moving freight to and from the coast, especially from places in the far Western and Southern Sudan.

An alternative highway connecting the Southern capital, Juba, with Mombasa, Kenya's Indian Ocean seaport, is now under construction and some vehicles already make use of the rough track of a temporary road. Another route through Uganda to Mombasa has been inoperative for long periods, both during and after the Amin regime.

Cotton exports have for some years been the chief source of foreign exchange, accounting for between one half and three quarters of the total value earned every year, but the Government

is now trying to diversify the country's economy so that less reliance is placed on a single crop. Strong hopes are placed on exploiting the considerable oil reserves known to exist in the south-west, as well as on agriculture, both by developing more irrigation schemes and by making more use of suitable land in areas of reasonable rainfall such as in Southern Kordofan and Kassala Provinces.

Because there is a wide disparity between Sudanese in the towns earning cash wages and the people of the rural areas living on a subsistence economy, the national per capita income of $290 is misleading and does not indicate the grinding poverty experienced by the "poorest of the poor", nor the difficulties constantly facing a large section of the population with little or no access to health, education or social services.

The United Nations Children's Fund (UNICEF) has been helping the Sudanese people since 1948 . At first it was giving assistance after natural disasters such as floods, famine or disease and then, at the end of the long years of hostilities in the South once the Addis Ababa Agreement was signed in 1972, UNICEF moved in with relief supplies for a population swollen by large numbers of returning refugees.

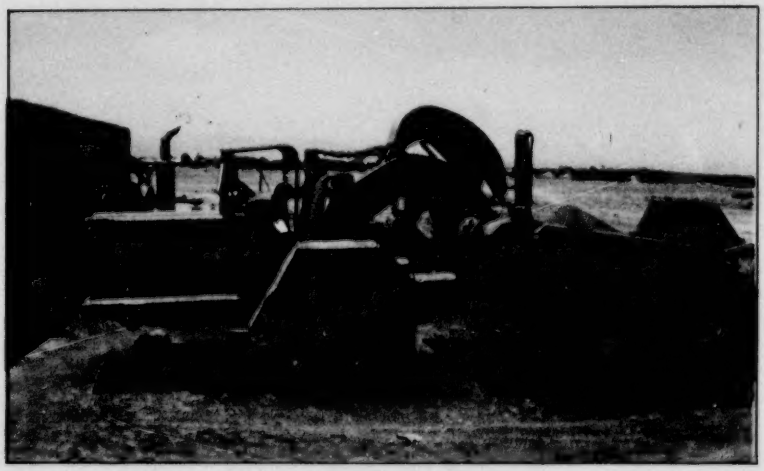
Since then, progress has been little short of dramatic and today UNICEF has become known far and wide in the Sudan for its help not only to children, but to women and especially mothers, aimed at improving family life and enabling women to acquire skills by which they can generate additional income.

Early assistance in the health field included the supply of drugs and vaccines, also help in controlling the eye disease trachoma, as well as undertaking mass smallpox and BCG campaigns. Help was also given to improve children's diet by supplying dried milk for the supplementary child feeding programme in schools and a start was made with nutrition education.

Soon afterwards, UNICEF moved into the field of primary education, especially assisting with teacher training and more recently developing curricula better suited to the relevant needs of the rural population. In the social services field help was given to forming youth and women's clubs.

The establishment of a country office in the Sudan in 1974 soon enabled the organisation to develop a more intensive programme to aid children and their mothers. Expansion moved into a rapid phase in 1976 and by the middle of 1979 the Khartoum office had developed programmes costing more than $40 million in allocations up to 1982. This represented a massive 800 per cent increase in programming over a three-year period and accounted for almost half of all the funds allocated by UNICEF to the Eastern Mediterranean and North African countries constituting the region.

With staff increased to 53 in 1979, including 16 international professionals, it became possible to get much nearer to the "grass roots" — or in the case of most of the Sudan, the sand. An office for the Southern Sudan was opened in Juba in 1974, followed by two other sub-regional offices in Wau and in Kadugli, the latter two mainly to help supervise the water projects being implemented in Bahr-el-Ghazal and South Kordofan Provinces respectively. At the same time it became possible to share an office in Port Sudan with the World Food Programme, enabling the Khartoum office to maintain close contact with shipping and supplies reaching the port.



This huge UNICEF-supplied earth grader, for use in rectification of hafirs in Kordofan, awaiting collection at Port Sudan.

During the period of rapid expansion from 1976 to 1979 when programming kept just one step ahead of staffing, administrative expenditure by the Sudan Country Office (SCO) actually decreased by more than 30 percent — from a total expenditure of 22 percent in 1975 to only 15.0 per cent in 1979.

By improved monitoring procedures and the system of delivering supplies, a programme implementation rate of 120 percent was attained in 1978.

However, this rapid rate of expansion prevented a strict sectoral balance being maintained, but efforts to rectify the imbalance began in 1979 when greater emphasis was placed upon zonal development plans. The main reason for the lack of balance was largely due to the fact that the Sudan Government had its own priorities to observe and by the very nature of the operation some sectors moved ahead faster than others, as UNICEF depends largely upon close co-operation with Government departments in programme implementation.

The Sudan Government has always given high priority to health and the emphasis was placed on primary health care several years before the WHO/UNICEF Conference at Alma Ata in the Soviet Union adopted this strategy in 1978. This dovetailed in neatly with UNICEF's own specific goals, as well as with the world-wide observance of the International Year of the Child, to which the Sudan also accorded major importance.

Good momentum was also attained in implementing water supply programmes and it is now intended to devote much attention to remedying the imbalance in sectors such as education and social services, once the Government is able to devote more attention to them.

SITUATION OF CHILDREN

The enormous physical obstacles in the Sudan, coupled with its poor infra-structure, vast distances and harsh climatic conditions have combined to produce extremely serious problems for the children of the Sudan, now, well on the way to constituting one half of the 17 million population. The Government's determined efforts to improve the conditions in which most children live have been stultified by the steadily-worsening economic crisis brought on by the high prices for oil, the over-dependence on cotton as a single export crop and prolonged internal political problems.

Statistics for the Sudan are difficult to come by and most data is unreliable, even where it exists. It is, however, estimated that child mortality ranges from about 200 per 1,000 live births under one year of age to possibly as high as 400 per 1,000 under five years of age in remoter areas.

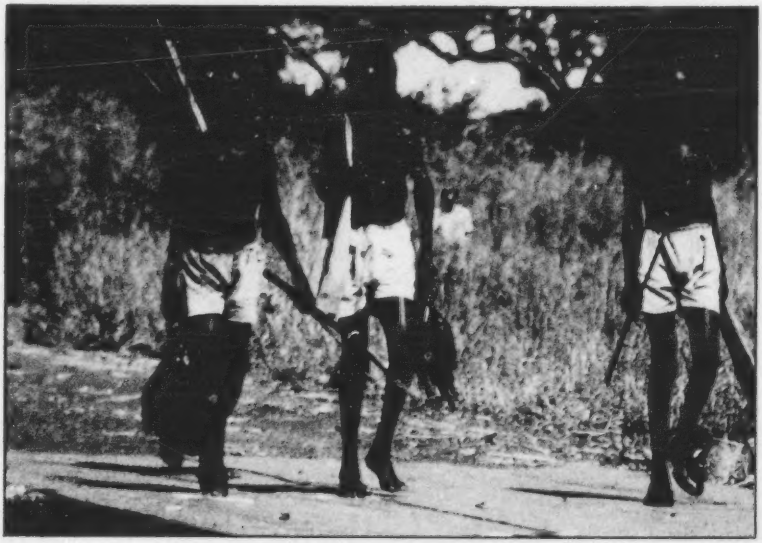
Almost half the entire child population suffers from one or other form of malnutrition and even in the towns diseases which could be prevented by immunisation cause a third of the deaths in this age group. Chief "killer" is measles, and the "cold chain" necessary to maintain suitable vaccines in a fresh state is extremely difficult to establish in a country like the Sudan, where temperatures are constantly high and refrigeration, even in towns, is erratic but is non-existent in rural areas.

This also applies to even the most basic sanitary facilities. In towns they are extremely basic and inadequate and do not exist at all in the countryside.

Even today, more than 20 years after independence, less than half the children in the Sudan attend school at all and the figure is much higher in the Southern provinces. In Jonglei Province, for instance, only 12.4 percent of school age children receive any primary education and in neighbouring Lakes Province the figure is not much better at 18 percent.

The Government has set the year 1990 as the target date for the attainment of universal primary education in the country,

but tremendous efforts will be needed even to approximate this goal. Something like 10,000 new primary schools will have to be built by then and an even more difficult problem will be providing the additional 60,000 trained teachers needed within ten years.



Less than half the Sudan's children attend school, and in the Jonglei and Lakes Provinces in the South, less than a quarter receive any formal education.

A phenomenon, still fairly new in the Sudan, is further adding to the manpower shortage. This is the "skill drain" caused by the migration of large numbers of workers, mostly men, to the oil-rich neighbouring countries such as Libya and the Gulf. While this does have the benefit of bringing the Sudan a substantial inflow of valuable foreign exchange, it is crippling development in many fields where urgent expansion is needed.

With all these problems borne in mind, the United Nations Children's Fund has chosen as its principal strategy for the next few years the policy of supporting these components of the national Development Plan most likely to suffer cutbacks because of the economic crisis.

PRIMARY HEALTH CARE

Several years before the WHO/UNICEF conference on primary health care was held at Alma Ata in the Soviet Union in 1978, the Sudan had accepted that the only way to deliver some form of health service to its widely-scattered rural population was by means of very basic assistance — primary health care — and then only if the local communities participated fully.

It was a fortunate coincidence that at about the same time, UNICEF also reached a similar conclusion for its aid to the "poorest of the poor" in such countries as the Sudan.

The result has been that Africa's largest country has gained a "head start" over many other African states in providing primary health care. In most of the Sudan's 18 provinces some form of health devlivery service is now operating at "grass roots" level.

It has been possible, for instance, to provide a basic form of medical aid to the camel nomads who roam right to the fringes of the Sahara in Northern Kordofan and Darfur, and also to other semi-nomadic people such as the Baggara who travel on their sturdy oxen year after year over the same migratory routes, seldom stopping for long at any one camp.

In setting its priorities, the Sudanese Government listed nomadic communities high on the programme along with other rural people spread out over the vastness of the million square miles of Africa which constitutes present-day Sudan. Because of the very obvious logistic problems, the nomads have been long neglected, but now are the target of the primary health care services which were planned as far back as 1974.

In the Sudan "primary" really means the "very minimum" — at least commensurate with effective treatment — but unlike the older branches of the country's health services, the emphasis right from the start has been on prevention rather than on cure. Major importance is placed on teaching rural people, including the nomads, about hygiene and some simple precautions to avoid the commoner diseases.

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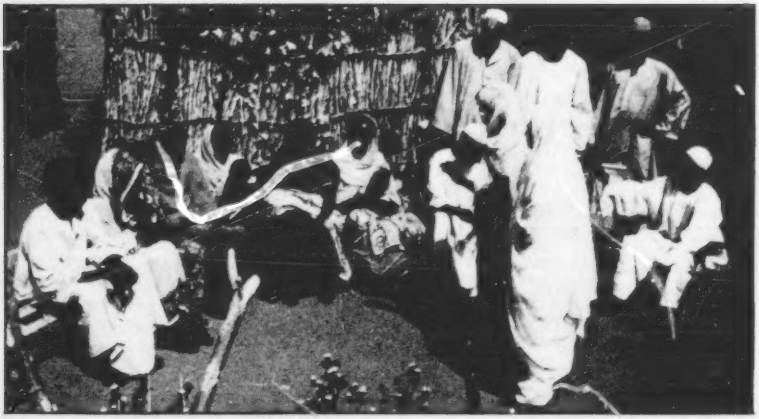
Shennabla nomads of Northern Kordofan are now receiving medical attention for the first time, thanks to community health workers such as Al Dadin el-Kheir al Amin.

It also means active — and not just token — participation by the local people. If they want to have even a basic health service to be made available, some contribution is expected from them — be it in cash, kind or some other way such as a service, and of course within the overall framework of the community development programme.

At first transport turned out to be one of the most intractable problems, but using a strictly practical approach, attention was turned to finding the simplest, most commonly available form of local transport.

It was, therefore, only natural that for the Kabbabish, who are among the true nomads of the Western Sudan, they should offer a camel to transport each young man they chose as a nomad community health worker (NCHW), whereas the Baggara cattle people to the south, equipped their nominees with oxen.



Women are also now serving as community health workers. Hafaf Fadal al-Maula (in pink, standing) giving a health talk in a village near El Obeid where she is aided by Mariam Murat (in white), a trained midwife.

Further south, the bicycle was an obvious choice in terrain which is firm enough to ride on, such as the ironstone land of Western Equatoria, even in wet weather. In the swampy lands of the "sudd", formed by the waters of the White Nile and its tributaries which spill out over vast plains of clay in the long wet season, the long legs of the cattle-rearing nomads prove the ideal way to forge ahead through the shallow water which remains for six or seven months each year, and brings all land transport to a standstill.

Initially there were some human problems — not least being hesitation on the part of some of the highly-trained medical personnel to accept the community health workers for what they are — the vanguard of a new wave of health educators stressing prevention rather than cure, but nevertheless capable of administering the very basic medicines to cure some of the simplest and commonest ailments — and of course referring more complicated and serious cases to more skilled medical personnel.

And in line with their strictly practical approach, they make use of their local knowledge, especially of the medicinal properties of the herbs, bushes and trees which grow in their habitat. One example is the fruit of the "tebeldi" or baobab

tree which not only provides a nourishing drink, but is a sure cure for dysentery.

As far as finding recruits, most communities have been very responsive and in fact in some areas the problem has been to keep the numbers down to within the limits set by the budgets.

The chief difficulty has been in the Southern Sudan where there has been little tradition of self-help in the past on which to draw and there is a tendency among some of the people to expect the Government to be the universal provider and if it cannot provide, then the matter rests there.

But although slower than in the North, progress is being made and the community health workers' school at Doleib Hill, on the White Nile a short distance from the Upper Nile regional capital of Malakal, has a regular series of courses which last nine months each, three months of which are spent on doing purely practical work in villages, or attached to primary health care units.

One of the greatest problems to community participation in the Southern provinces is that due to the total absence of any cash economy in some of the remoter and least-developed areas there is not even enough money in the community to pay the small monthly stipend for the community health worker. Among the cattle-rearing nomads such as the Dinka, most of the young men who would be eligible for recruitment either want to work in a town or to stay at one of the cattle camps, since the tending of their large cattle herds is still closely inter-woven into the whole life-style.

Bringing in health workers from other areas would go against the whole concept of community-based health care and it seems that several years of intensive education are needed before there can be any radical change in outlook in some areas.

Experience in the more successful areas has shown that, at least in the initial period, close supervision is the surest way of achieving maximum efficiency and to do this there has been a greater expenditure on transport for supervisory work than at first anticipated, but the results have more than justified this.

The normal pattern is for five primary health care units (PCHUs) to be linked to a dispensary and become one primary health care "complex", each supervised by a medical assistant who is based at the dispensary and who is responsible for seeing that the five units are regularly supplied with expendable items, mainly drugs. In general each unit covers a radius of about 16 kms and serves a population of around 4,000.

Because of the different circumstances, the nomadic health workers cannot be so closely supervised, nor do they serve so many people, but since much more of their time is spent on travelling, this is unavoidable. Ultimately it is envisaged that 80 percent of the Sudan's nomadic and semi-nomadic population will be covered by the primary health care programme.

Educational standards for community health care workers are not that high and invariably are set at completion of primary school education. However, this has been left fairly flexible to correspond to local conditions and the final arbiter in recruitment is usually the Assistant Commissioner of Health in each Province, who bases his criteria on the local education pattern.

The aim is to set up a network of primary health care complexes covering the whole country by 1984, but places which have hospitals are naturally excluded. There are few hospitals to be found in rural areas, however, and even in an entire province there are few outside the main towns. In Jonglei Province, in the Southern Sudan, the only one at present is in the provincial capital of Bor, although one is under construction at Akobo, on the eastern border.

Some idea of the paucity of established formal health facilities can be gauged from the fact that in 1975 the Sudan had only 171 hospitals, (or 1.1. for every 100,000 people) and 144 health centres, (one for every 100,000 people). At that time the commonest facility was the dressing station, of which 1,500 existed, and now a number of these have been turned into primary health care units. Few have been built since.

The intention is to ensure that the primary health care centres and the work done by the community health workers be

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closely integrated into the country's medica services, rising through levels of gradually-increasing medical sophistication — the dispensary, the rural health centre, the rural hospitals, the provincial hospitals — ultimately to national medical institutions.

While the final target is 1984, already significant steps should be achieved by the end of 1980. The Action Plan drawn up for the operations being undertaken by the Sudanese Government, in conjunction with UNICEF, the WHO, WFP and UNIDO, for which UNICEF has allocated the sum of $3 million for the years 1979 and 1980, has as its immediate goal by 1980 the provision of:

* 580 primary health care units within reach of an additional two million people in the rural areas in the Sudan's 10 most deprived provinces.

* 162 laboratories for basic analyses.

* Oral rehydration for approximately 400,000 rural people suffering from dysentery.

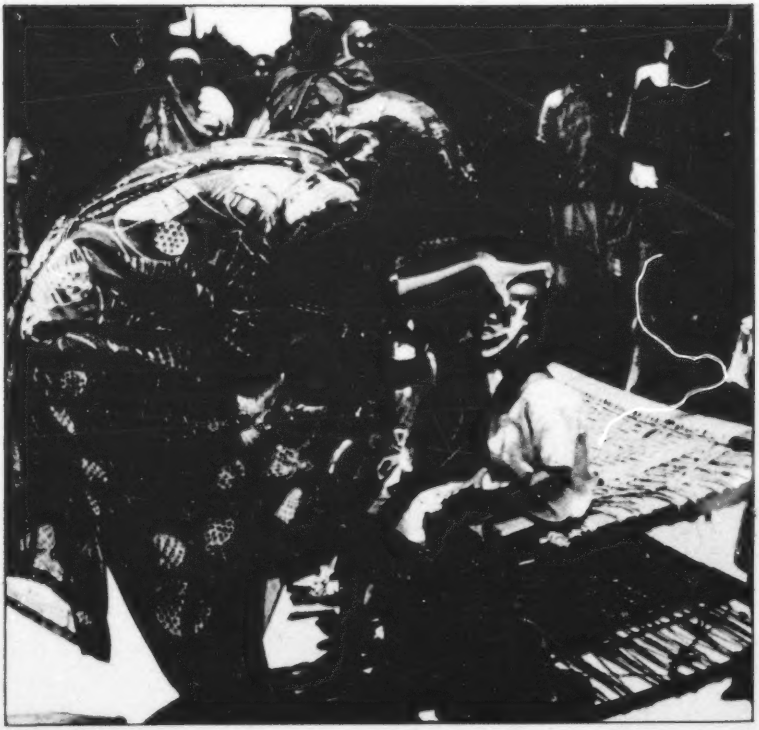
* MCH services to be extended to another 1,350 rural communities.

* 2,500 additional paramedical personnel to be trained for primary health care complexes.

* 1,500 additional paramedicals for the referral and support systems of the primary health care programme.

* Re-orientation of more than 2,300 Ministry of Health officials to a fuller awareness of primary health care principles.

* Increasing supervisory capacity for primary health care at 20 percent for priority regions and 5 percent elsewhere — mainly by providing transportation.

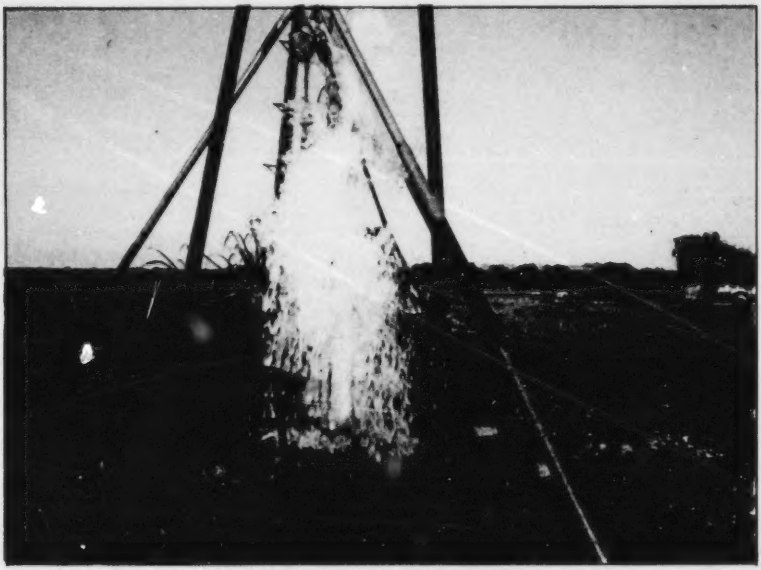


A successful campaign is being waged against trachoma and other eye diseases in the Northern Sudan. Here on-the-spot treatment is given by a visiting medical team in the Menagil area of Gezira.

At the same time, UNICEF is helping to implement companion projects covering extended facilities for nutrition education to three more provinces making a total of eight, and simultaneously also extending health services to another half million school children, and controlling trachoma and conjunctivitis and other eye diseases in arid areas, as well as establishing three referral hospitals for children in Khartoum, with a total capacity of 600 beds.

An expanded immunization programme undertaken by the Ministry of Health is also due for evaluation within this period, as well as the work of its health education service.

The provision of clean water has been one of the most successful of the projects aided by UNICEF in the Sudan.



WATER FOR THE PEOPLE

More than in most countries, water is a vital but extremely scarce commodity in much of the Sudan and most natural water sources are highly polluted. Even underground natural reservoirs tend either to be brackish or contaminated by chemicals in the soil or rock to such an extent as to be unfit or dangerous for human consumption.

But since people cannot survive without it, rural Sudanese are forced to make use of whatever water is available to them — and even today few of these people are aware of the serious risks they take by drinking contaminated water. The many sicknesses resulting from polluted water sources are taken as a matter of course.

Rain hardly ever falls in the Northern Sudan where the hardy nomads have adjusted themselves to such harsh conditions, and in the East and parts of Western Sudan rainfall is scarce and unreliable and usually far from adequate even when stored in such traditional "reservoirs" as the trunks of baobab ("tebeldi") trees or in earth dams, known locally as "hafirs".

Those most vulnerable to contaminated water are, of course, the children and one of the commonest ailments found among patients visiting rural clinics throughout the Sudan is intestinal disorders caused by bacteria in the water, but often the illnesses are more serious and even fatal, with schistosomiasis (bilharzia) a serious hazard.

Because the water flows sluggishly and it acts as the main "sewer" for much of the Sudan, from Nimule in the far south to Wadi Halfa on the Egyptian border, the entire catchment area of the Nile yields highly-polluted water, and when used for irrigation purposes almost invariably produces new sources of bilharzia infection.

Early on in its planning operations in the Sudan, UNICEF identified the need for clean water as a high priority, but in a country one million square miles in extent, the main problem was "where to start?".

After much investigation into the geological problems as well as the health aspects and population concentration, and taking into consideration both the felt and apparent needs of the scattered communities, it was decided, in consultation with the Government and other bodies, to make a start in the Bahr-el-Ghazal Province of the Southern Sudan. This is an area which has suffered especially from the serious disturbances lasting 17 years until ended by the Addis Ababa Agreement in 1972. A UNICEF official, visiting the Sudan at that time, cited the "overwhelming need" to improve existing sources of water supply.

Following an assessment undertaken of the water supply situation in the South, UNICEF included a broad outline of a water supply programme as a "noted" project submitted to its Executive Board and for which sums totalling $1.9 million were sought. As several voluntary organisations were also working on plans for providing water supplies, UNICEF decided to locate its first water project in the Wau area of Bahr-el-Ghazal Province with the aim of making it essentially of a demonstration and training nature which would help the local authorities in that province and adjoining areas in solving their water problems — in other words produce a "multiplier effect". Implementation began in 1975 and while work was still in progress around Wau, UNICEF began to plan a project in a second area as an extension of its water supply activities. This second area was in South Kordofan, the Province immediately to the north of Bahr-el-Ghazal but very different in many respects, not only geographical and hydro-geological but in culture and political background. For this second operation, the provincial capital of Kadugli was made the central base.

THE "WAU PROJECT," BAHR EL GHAZAL

When the $1.9 million water supply project was first begun in Bahr-el-Ghazal it introduced the relatively new "hard rock drilling technique" into the Sudan. This proved the most effective way of sinking wells in this difficult terrain. During 1976 and 1977 much of UNICEF's limited resources in the Sudan were diverted to Wau so that it could be demonstrated that it was possible to implement such a drilling programme with its own training and logistic/supply components.

However, so many difficulties were encountered in the early stages, including the very limited capacity of the new Southern Region Government to assist because of the ravages due to the years of civil strife, that the original plan had to be modified to provide for a five-year extension after 1977, with an additional $3.5 million for 1978 to 1982.

The revised objectives included:

- 1,400 boreholes to be drilled by 1982, each with a hand pump and cement apron.
- Government crews to be given in-field training in drilling techniques.
- A workshop at Wau for training personnel to maintain and repair drilling equipment and project vehicles.
- A laboratory for water analysis, including training facilities for teaching local personnel in simple analytical techniques.

Other objectives were to train national personnel in project management and provide the means to train local people in the care and maintenance of the hand pumps and for health education and sanitation campaigns to be launched eventually with a view to improving general community health standards. Monitoring and evaluation procedures were built into the project initially.

Among the unexpected problems encountered at first was the relatively low level of skills possessed by the local manpower available, combined with the inability of the local authorities to provide much assistance.

In addition there was a far greater demand for potable water than was anticipated by the survey mission. To compound the problems further was the fact that the villages to be supplied with wells were among the most remote and under-serviced small villages in the whole of Africa — and the water for the most part lies under hard rock, difficult to drill.

Despite all these problems, however, the UNICEF - trained drilling teams succeeded in providing more than 80,000 people in Bahr-el-Ghazal with access to potable water — in most cases for the first time in their lives — and the performance to date augurs well for the final target of 400,000 people to be reached by 1982, when the project's second phase is due for completion.

The principal goal in the first phase was to provide 120 durable, simply-constructed hand pumps and this was achieved ahead of schedule. In addition, an effective programme for training two drilling crews was implemented.

Less successful, however, were the project's health education and nutrition education components and although the importance of these supporting components are fully appreciated, priority had to be given to construction of the wells, and installation of the handpumps and the education campaign will follow shortly.

The provision of so many wells and pumps in the early stages was made possible only by the crews working doggedly on the drill rigs for long hours and displaying exceptional patience in coping with the innumerable technical and logistic problems which arose. By 1979 the drilling crews consisted entirely of Sudanese personnel and two Sudanese hydro-geologists had established a small laboratory to analyse water samples from the boreholes. At the same time some progress was made by the end of 1979 on the project management side,especially in the training of local counterparts.

Wherever possible wells have been sited near points where the people tend to congregate, such as primary schools, dispensaries, primary health care centres, or market-places. The type of pump used, "India Mark Two ", was chosen for its durability and minimum of moving parts. Now bodies for these pumps are made in the Wau workshop and the imported mechanisms installed at the well sites.

In 1978, once a significant number of pumps had been installed and safe drinking water was available to a fair sample of the population, UNICEF commisioned a survey on how a cross-section of village women in Bahr-el-Ghazal reacted to the easy availability of safe drinking water.

The results showed a small but a significant drop in the incidence of family illnesses such as stomach pains, fever, diarrhoea, vomiting and skin itching, which in the past had been due to unsafe water, or lack of water for personal hygiene.

Simple-to-operate pumps need little maintenance, and the local people call them "donkeys".

However, where a place to collect water nearer than the borehole was available, some village women preferred the shorter journey for water of questionable purity to clean water from a well slightly further away. This was a clear indication of the need to introduce an intensive health education campaign.

One of the most significant findings was the great saving in time resulting from the easier access to safe drinking water for most of the women interviewed and meant, as far as they were concerned, an average saving of six hours every day that would have otherwise been spent on trudging to the precious water source and home again. It also was found that in most cases those children who shared the water-collecting chore with their mothers, also benefitted from the greater amount of leisure time which could be spent on study or youthful pursuits.

During the dry season it was established that women in the rural areas of the Southern Sudan made about 40 trips every week to fetch water and most spent the time gained by having a nearby pump into spending more time preparing food or brewing the local drink, duma. Only a minority of the women interviewed said they spent the extra time in socializing or sleeping.

SUDAN

EGYPT
LIBYA
CHAD
CENTRAL AFRICAN REPUBLIC
ZAIRE
UGANDA
KENYA
ETHIOPIA
RED SEA
Wadi Halfa
PORT SUDAN
Dongola
Karima
Atbara
Omdurman
Khartoum N.
KHARTOUM
Kassala
Gedaref
Barakat
Wad Medani
Sennar
El Fasher
El Obeid
Kosti
S. KORDOFAN
Nyala
Kadugli
Roseires
TANA
Malakal
BAHR EL GHAZAL
Wau
L. LAKES
Yambio
JUBA
Kapoeta
Nimule
SCALE
500 km.
AREAS OF UNICEF WATER PROJECTS
CAPITAL
OTHER TOWNS
RIVERS
PLANNED ACTIVITY AREA

THE KADUGLI WATER PROJECT

Although the UNICEF-assisted water project in South Kordofan also entails drilling boreholes and installing simple handpumps, the main emphasis is on rectifying the reservoirs, or hafirs, which are used to store large quantities of rainwater and when full after a good wet season, should retain enough water for consumption by people and cattle during the dry season.

However, most of these hafirs were constructed in the 50s and 60s and have become badly silted up over the intervening years with the result that their storage capacity is very limited and some retain only a negligible amount of rainwater.

UNICEF approved an initial sum of $1.9 million in 1977 for a second rural water supply project in South Kordofan as an extension of the existing Bahr-el-Ghazal project.

It involved not only de-silting the hafirs as part of a rectification process, but also filtering the water stored in the hafirs so that it could be rendered safer for human consumption.

On further investigating the problem involved it was found that the initial allocation would be insufficient for a project of any lasting value, and so a total UNICEF commitment of $6.4 was envisaged and the time-table extended to last from 1978 until 1983.

As with the project in Bahr-el-Ghazal, other U.N. agencies liaised closely with UNICEF and the Government in the planning stage and the basic agreement also involved UNESCO, with a role to play in the planned health education input.

In this case a substantial input also came from the Rural Water Corporation and the Provincial authorities and the goal in South Kordofan was directly related, as was the Wau project too, to the target set by the UN Water Conference held in Mar De Plata Argentina, in 1977 that sufficient potable water and adequate sanitation should be made available to all the world's population by 1990.

As in Bahr-el-Ghazal, water-borne diseases chiefly affect children in South Kordofan and in the past 15 years studies have shown that the incidence of these diseases has been steadily rising. The low level of sanitation also contributes to the incidence as well as the shortage of water and the bad quality of that which is available. Most people traditionally obtained their water supplies from rivers, canals or stagnant pools and the older-type of open well has little or no protection against contamination. Much of the pollution comes from human and animal waste.

South Kordofan was chosen as the location for the extended water project because it was high on the Government's priority list and because of the potential capabilities in the Province in conjunction with expanded development plans in the health, education, nutrition and social fields.

One problem facing UNICEF is that although the ceiling of the Kordofan project has been raised to $6.4m., much of the additional funds are not yet forthcoming from donor countries, and implementation has had to be geared according to the available finance in the same way as it has been done in Bahr-el-Ghazal.

The entire project has the following objectives:

* Establishing 48 systems for filtering and purifying hafir water by the end of 1983.
* Rectification of 140 hafirs, including de-silting where necessary by the project completion date.
* A total of 200 small diameter boreholes to be drilled by 1982 and fitted with handpumps and cement aprons.
* Providing training facilities for 60 pump/filter attendants for the 48 water purification units, and for 200 handpump caretakers for the pumps due to be installed by 1982 and for two 10-men drilling crews (by 1980).

The project also plans to initiate basic health education and sanitation education campaigns in 300 villages directly affected by the hafir and drilling projects and an evaluation and monitoring programme is also provided for.

This new filtration plant in South Kordofan yields potable water from the hafir (left).

Purifying the hafir water involves a number of problems and so three different systems are being tried out and on their respective results will depend the final recommendation as to which is best suited to local conditions. The systems are (1) slow sand filters (2) rapid gravity filters and (3) rapid pressure filters.

It is estimated that rectification of all 140 hafirs in South Kordofan will yield an extra 1.5 million cubic metres of water. In 48 of the hafirs nearest to human population, filter plants have been installed to make the water also fit for human consumption — some 200,000 cubic metres.

Chemistry class at Omdurman Training College.

ASSISTANCE TO EDUCATION

The education sector in the Sudan has received assistance from UNICEF ever since 1973, with the major effort going into supporting the In-service Educational Training Institute (ISETI), and its programme for providing in-service training to primary school teachers.

During the initial period of aid, a large number of school text books were printed in Khartoum on paper supplied by UNICEF, together with a printing press. Certain key personnel also benefitted from a series of study tours.

Realising the need for regular supervision to ensure the success of any such programme, UNICEF also provided a substantial number of vehicles for supervisory work, as well as other vehicles for transporting students attending teacher training colleges in various parts of the Sudan.

Some aid was also given to the extensive school meals programmes, mainly supported by the World Food Programme, and since UNICEF was also closely involved in nutrition, it also aided nutrition and health education programmes, besides a project aimed at improving women's educational standards generally and, in particular, increasing women's income-generating capabilities.

The UNICEF programme to assist education in the Sudan continued along these lines without any break until 1979 when a much more ambitious and carefully-formulated programme was introduced. This was a new basic education programme, the key element of which are Integrated Rural Education Centres (IRECs) -- much more than mere schools, and planned to become the principal "change-centres" throughout rural Sudan, with the object of training young people in "life skills".

The Government's main desire, through this programme, is to expand educational opportunities for young Sudanese, but free of outside influences and ideas so that the schooling will reflect more truly indigenous cultures and values.

This underlying theme has been dovetailed into the plan to devote the major share of the Government's efforts and resources

to education to make basic primary education available to all. In order to achieve this goal it has set the 1990s as the decade by which universal primary education will be achieved in the Sudan, with a target of 100 percent enrolment of seven-year-olds into grade one primary classes, beginning with the 1990—91 school year.

One of the first tasks of this ambitious programme is the re-training or re-orientation of teachers to prepare them for the new curricula to be introduced into primary schools, making education more relevant to the pupils' surroundings by basing teaching on an activity-oriented approach.

The first four years of the new primary education system in the Sudan, both in primary schools and in the non-formal sectors, will concentrate on basic education, while the subsequent fifth and sixth grades, and also the non-formal sector, will have training in life skills as the main activity. The IRECs will each have the task of bringing education into much closer contact with the community and especially other local sectors of activity such as farming, health work, community development, social welfare and other fields.

And while these IRECs are destined to become "change centres", so will the new teachers become "change agents". Training of the teaching staff, as well as of "teacher educators", who will train the teachers, and school supervisors who will monitor the school work, will be directed from the old-established Education Institute at Bakht-er-Rudha, near Ed Deim, which has been modernised for the important role it has been called on to perform.

While Bakht-er-Rudha has now been given responsibility for all the production involved in the new curriculum development exercise throughout Northern Sudan, a companion centre at Meridi, in Western Equatoria, will handle the curricula to be used in the Southern Region, specially adapted to meet the different conditions there.

Crucial to the Government development strategies for re-forming the school curriculum through teacher education and

re-education (in the case of the existing staff) are the pre-service and in-service teacher training programmes, and for this reason UNICEF has directed much of its assistance to strengthening the In-service Educational Training Institute (ISETI) and its sub-centres outside of Khartoum.

To this end much of the tuition is being given by means of audio-visual aids, not only the simple unsophisticated types, but also the more modern equipment, including video-tape and closed circuit TV.

At the same time, much of the work in the field is based on securing the maximum participation of local communities, because just as the peoples' participation is vital to the success of the Sudan's primary health care programme, so will the success of the large education programme rely on many of the school facilities being provided through community efforts or self-help.

Teachers of tomorrow, these girl students of Omdurman Training College pose with their netball team before a game.

As a separate activity complementing the others is the research work being undertaken into the feasibility of low-cost building designs for school classrooms so that the maximum number of classrooms can be made available for Sudan's rapidly-expanding school population.

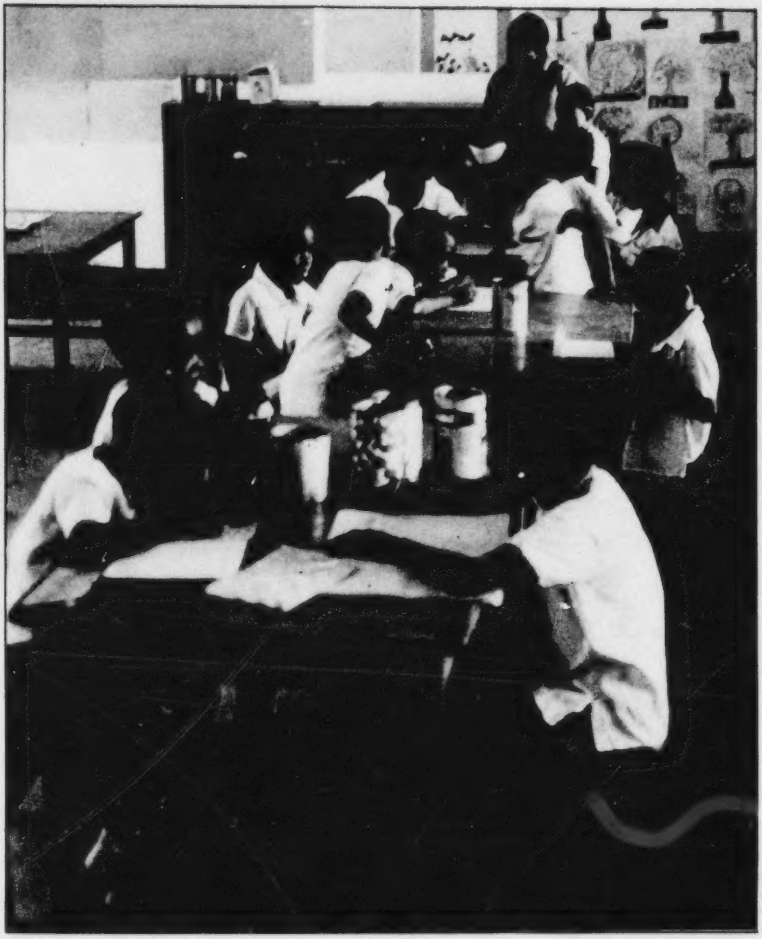
Right from the start positive and detailed goals were set for this "basic and functional education in the primary sector programme and the non-formal sectors for women and children" – to give the programme its full title.

These goals, set back in 1978 when the Plan of Operations was drafted for signature by a whole range of co-operating UN agencies, including UNESCO, UNDP, WFP, and the World Bank as well as UNICEF, fixed the end of 1980 as the date for project completion.

By this time it is hoped to achieve the following:

- re-train 140 teacher supervisors
- train 200 more school supervisors
- train 300 primary school heads
- equip 11 primary teacher training institutes (PTTIs)
- produce 2,800 newly trained teachers
- equip 1,400 classes with basic teaching kits
- carry out a national nutrition survey to improve the effectiveness of nutrition education in schools and non-formal training programmes for women
- provide cooking utensils for 54,000 children benefitting from school meal programmes
- train 200 hitherto untrained teachers in the Southern Sudan by means of summer courses.

Other accomplishments due by the end-1980 deadline will include special programmes to help women train in life skills and income-generating abilities through production training centres, strengthen the school supervisory services, extend the women's nutrition education scheme to four new centres and improve the resources of six existing centres, provide more study tours for curriculum development specialists and school supervisors and improve the serviceability of vehicles supplied by UNICEF through providing the necessary spare parts for reconditioning.



One of the better-equipped schools in the South is in Juba. Most others occupy dilapidated buildings, or mud huts, with few teaching aids or even desks.

Experience gained in the early days of the programme helped to prevent waste and effect certain economies. One example was the use of eight trucks supplied to primary teacher training institutes also to serve as buses, since there was no need for these vehicles to be kept exclusively for one purpose.

Village women in the Western Sudan are traditionally home-builders as well as home-makers.

Income-generating skills are now being taught to women and girls. Traditional crafts and basketwork are popular subjects for those staying at home.

SOCIAL SERVICES

Due to sweeping changes involving the Ministries concerned, implementation of UNICEF - aided programmes for women and girls encountered certain difficulties, especially with the abolition of the Ministry of Youth and Sports, some of whose responsibilities were transferred to the Ministry of Education and Guidance.

During the administrative vacuum resulting from the changes affecting both policies and personnel, UNICEF endeavoured to fit its assistance programme into the new pattern which evolved, keeping in sight its chief target, that of providing assistance primarily to young women and girls, but also giving some help to the formation of youth training centres in various parts of the Sudan where young men and young women receive training in an assortment of trade skills.

There are now a total of 23 youth training centres in the country, although not all are yet fully operational. Trade skills taught to young men include metal-work, carpentry, bricklaying and electric wiring, while cottage industries and domestic skills are being taught to young women, mainly on a part-time basis. During 1978 and 1979, 3,000 young women benefitted from such training courses.

A new two-year project was introduced in 1979, extending UNICEF's support to women's programmes in the Sudan which it began in 1973. The main difference is the special emphasis laid on finding new ways by which Sudanese women can play a greater role in the country's economic and social development.

The new project aims not only at encouraging greater women's participation in the country's labour force, but also at acquiring income-generating skills so that more women can earn money through working at home.

For women whose main occupation is bringing up their families, the project has provision for teaching better child-care techniques and for giving ideas for home improvement, as well as greater promotion of basic health education and nutrition

services, all co-ordinated with the provision of supplies of clean water.

The special aims of the programme were to improve by the end of 1980 teaching standards of those instructors training women and girls at youth training centres, and also to effect an overall improvement in the work of the staff, from supervisors to clerks, at the same time widening the type of instruction to place greater emphasis on home improvement tuition and also training for cottage industries and for women's participation in trading activities.

Much of this has been accomplished through short-term, full-time courses and also by in-service courses. Arrangements were also made for some instructors to make study tours to neighbouring countries including Egypt and Kenya, to witness progress being made in similar fields.

To ensure better logistical support for its project and also to provide more comprehensive supervision as well as evaluation and follow-up procedures, UNICEF allocated a large proportion of its budget on this project to providing vehicles and spare parts to 11 youth training centres.

As well as to the youth training centres, a large part of UNICEF's assistance was in the form of supplies and equipment to the women's training centres and also for kindergartens and other places with pre-school activities. The total cost of this two-year project was in the region of $400,000.

In spite of the disorganisation caused by the administrative changes within the respective government departments, and the resultant delays, the project again gathered momentum later in 1979 and during 1980, when considerable benefits accrued from work done by the Chief Technical Adviser from the International Labour Organisation (ILO), who revised the project's shortcomings and made useful proposals for remedial action in certain spheres. One result of his recommendations was an intensified effort to reach the main target population in the youth training centres — namely the young women school-leavers (including premature "drop-outs") and the poor urban women, especially those living on the fringes of the large towns, unable to

reach the central facilities. Attempts to reach the latter included the opening of a number of "sub-centres" with some basic facilities.

Baggara women move constantly with their menfolk, using oxen for transportation. For jouneys lasting months they carry all their cooking utensils with them.

While these efforts to help young women and girls have constituted the major part of UNICEF's efforts in the social field in recent years, there have been other activities, including close liaison with the National Council for Social Welfare and helping with advice and organisation, especially in the period of uncertainty in 1979 which followed the abolition of the Ministry of Social Affairs and the transfer of its responsibilities elsewhere. Eventually direct intervention by the nation's President resolved a difficult situation and the Council was taken directly under the control of the President's Office.

UNICEF also played an important role in helping to fund and organise a conference on "The Changing Status of Sudanese Women", and also gave active support to the national conference on "The Traditional Health Practices Affecting Women". One of the major topics of this conference was the controversial issue of female circumcision and as a result of the deliberations at the conference, the National Council for Social Welfare, in close collaboration with the UNICEF Office in Khartoum, published an illustrated booklet in Arabic entitled "Infibulation — For it .. Against it" in which this delicate subject was discussed impartially and informed opinions quoted — probably for the first time in the Sudan.

Not all the projects in the social services sector could be completed on schedule as a result of the large-scale re-organisation exercise within the Government during 1979. One of the negative effects was the serious delays caused in implementing various surveys aimed at supplying much-needed information and statistics on such matters as household expenditure in the Sudan and the needs of women, children and youth, as well as publication of a statistical handbook on children in the Sudan.

However, the UNICEF office in Khartoum made determined efforts to have the staff of the Department of Statistics strengthened with a stronger management, able to tackle forward planning effectively and better co-ordinate its activities. One of the chief problems hampering the efficiency of this Department has been the loss of senior staff to multi-lateral organisations and through emigration to Gulf States, where better salary and living conditions are to be found.

TRANSPORT & SUPPLIES

One of the most serious problems hindering development in the Sudan is the lack of any significant communications and transport infrastucture, and the bottleneck which holds up both imports and exports — Port Sudan.

The Sudan's only port, situated on the Red Sea coast on the extreme eastern side of the country, is far from the main centres of population and is itself located in an area of only limited development potential.

Until recently the only tenuous link with the rest of the country from Port Sudan was the single-line railway which has suffered from an acute shortage of locomotives and rolling stock in good working order. This situation has prevailed for many years due to the Sudan's inability to spare enough foreign exchange to undertake a massive, but long overdue re-organisation and modernisation programme. (It is estimated that as many as three-quarters of the locos are immobilised because of lack of spares).

Strenuous efforts have been made recently to drive a road through rugged and inhospitable country to Khartoum and the Nile and its construction and asphalting throughout its length is almost complete. Once in full operation, this route will alleviate many of the problems which have hampered the Sudan's development for decades and the road traffic it will carry, moving goods from the interior and vice-versa, will be a valuable complement to the seriously over-taxed rail route.

Many of UNICEF's own programmes have been seriously held up in recent years because of the long delays in receiving equipment at the project sites. Getting supplies shipped half way round the world to meet a target date is quite an accomplishment in itself, but all the effort this takes can be nullified if the material lies for months on the quayside at Port Sudan.

A consignment of 250 tons of paper supplied by UNICEF for a Government textbook printing project was stranded for 18 months because the railway could not lift it from the port.

One difficulty facing UNICEF staff who try to achieve rapid and effective implementation of projects in the Sudan is that formally UNICEF's function is to deliver supplies to Port Sudan, after which the Government assumes responsibility for clearance, shipment inland and distribution to the consignee. There is so much competition within the Government for railway wagons that there are at times interminable delays in the movement of goods from Port Sudan inland.

Before the new road was constructed, the cost of road transport during the normal dry season was three times more expensive than the railway rate, but during the rainy season the cost could be six times as much as by rail. Hence the competition for space on the trains.

Even securing the scarce wagons is not enough, and because UNICEF programme staff are concerned to see implementation become as rapid and effective as possible, they take that extra bit of trouble to "chase" the project equipment all the way to its destination.

At times it can quite literally be a "chase", as, for instance, when four wagonloads of steel casing tubes for sinking wells at a UNICEF-assisted water project near Wau failed to arrive at the end of the long and tortuous railway line after the journey though Kordofan from Port Sudan. Eventually, exasperated by waiting, UNICEF programme officers travelled the entire length of this line,checking each and every siding for the missing consignment. Sure enough, the wagons were eventually found, shunted off in the middle of nowhere — a long way from Wau. The casings, which were urgently needed for the water project in Bahr-el-Ghazal, had been dispatched from Port Sudan in January 1978 — and eventually reached Wau that same November, but if it had not been for the UNICEF "sleuths", the shipment might still be standing at that lone siding.

Now, after years of frustration in trying to work through existing facilities — and getting nowhere — the organisation has resorted to using its own initiative to "cut corners". One example has been communications. Because of the inadequate telephone system and frequent breakdowns, UNICEF some time ago installed its own two-way radio links between Khartoum and

the sub-offices at Juba, Wau, Kadugli and also at Port Sudan — and now has instantaneous communication, including answer-back facilities, with the outlying offices.

Sudan Airways serves 16 local destinations in the Sudan from Khartoum but due to the chronic shortage of fuel, spares and personnel the flights are frequently cancelled and at one period in 1979 the Southern headquarters at Juba went several weeks with no scheduled air services.

Because air is the only practical method of getting badly-needed spares, this experience — and many others — led UNICEF to investigate the possibilities of operating its own aircraft, in order to ensure urgent delivery of vital parts needed to keep projects operational, and also to move its staff to supervise projects without suffering frustrating delays waiting for days, and even weeks, for space on the normal commercial flights. Early in 1980 a turbo-prop aircraft was leased for this purpose and has been doing sterling work in ferrying material and personne between Khartoum and the outlying offices — and vice versa.

Wherever possible UNICEF tries to be self-sufficient and imports its own fuel reserves so that project implementation does not suddenly grind to a halt when the normal fuel supply dries up.

Another important breakthough was achieved when it became possible to obtain goods quickly by chartering freight aircraft flying direct to Khartoum from Europe. Instead of passing through the Port Sudan bottleneck, these cargo planes bring the supplies of urgently-needed goods — spares, urgent medicines or special foodstuffs — direct from the capitals of Europe to Khartoum in a matter of hours.

One problem, eventually overcome after much perseverance, was the opening up of a new route for UNICEF supplies to reach the Southern Sudan. Long delays in transporting shipments from Port Sudan to Wau and Juba were a common problem in the past, for supplies could take anything up to one year to get to the South.

Checking a new consignment of motor cycles just arrived in the stores for UNICEF equipment in Juba.

Once the UNICEF-aided projects in the Southern Sudan got under way and bulky materials were needed in a hurry, such as drill bits and lengths of piping for the water project, plus trucks and emergency food and medical supplies, it became necessary to look for an alternative to the long route from Port Sudan by rail to the Nile at Kosti and thence by river steamer to Juba.

The answer lay in the Kenyan port of Mombasa, linked by a good road system to Northern Uganda and thence to the Southern Sudan, with sufficient vehicles always available for convoys. This route suffered a temporary closure in the latter days of the Amin regime, when fighting was in progress, and afterwards there were serious security problems, and an alternative route was forged directly from Kenya through rugged country west of Lake Turkana and this is now being brought up to good standard.

In the Sudan itself a continuing problem has been lack of spare parts for vehicles, coupled with a shortage of mechanics and workshop space, but UNICEF has assisted both the central government and local governments to develop their own vehicle maintenance and repair shops so that the maximum possible number of vehicles can be kept on the roads — and maintain the tempo of project implementation.

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PLANNING FOR THE FUTURE

Since the Sudan is not only the largest country in Africa, but has also one of the largest concentrations of "the poorest of the poor" within its boundaries, plus an immense number of refugees and other displaced persons, UNICEF sees its role in the Sudan in a very special light.

In many countries the classic role of a United Nations agency is to formulate a plan for assistance in one sector, having a time-table perhaps of up to five years, after which it is assumed that the country itself can take over full responsibility for running the project, or if it is a training project perhaps the courses will have turned out sufficient trained personnel so that any future training needed will be within the Government's capacity and UNICEF assistance can end.

The Sudan is one of the countries of the developing world where a rather different approach must be taken and projects developed with a much longer timetable. In some cases UNICEF is considering giving direct assistance for a number of years, stretching even through a whole generation.

Depending, of course, upon the funds available, it is envisaged that in future years UNICEF's policy in the Sudan will be to concentrate on the most deprived provinces or areas where little assistance is already being given and at the same time take a special "zonal development" or a multi-sectoral approach, as has already been adopted in the case of aid to Bahr-el-Ghazal and South Kordofan.

It has already become abundantly clear that a large proportion of the Sudan's "poorest of the poor" lives in the Southern Sudan, and while continuing its present assistance in some of the Northern Provinces, in future UNICEF will give greater attention to those areas where a concentrated effort will hopefully yield visibly successful results.

One such plan is being considered for aiding education in Bahr-el-Ghazal and Lake, building upon the existing infra-structure and adding improvements where found necessary and laying

special emphasis on sound management so that efficient implementation can be assured.

It is calculated than some $15 million will be needed for this particular education project and will involve one of the most radical changes yet made in UNICEF's approach to assisting education. The main stress of the tuition will be on imparting life skills to the young people and making everything that is taught strictly relevant to the students' local surroundings, and not bring in foreign ideologies or teachings which have no relevance to conditions or life in the Sudan.

Such an attitude will also pave the way for greater local participation, in the same way as in the primary health care programme and it is hoped that many community teachers can be made available on this basis so that new schools will not find themselves suffering from a crucial teacher shortage.

It will be some time before kindergartens like this one in Omdurman can be built all over the country, but the Government aims at universal primary education by the 1990s.

Drilling rigs have become familiar sights in Bahr-el-ghazal and Kordofan and UNICEF also assists another water project in Lakes Province.

In the case of further water projects, UNICEF will continue with its present work in Bahr-el-Ghazal to complete the number of wells that are due to be drilled and pumps fitted. In the meantime, plans are well advanced to begin operations of a similar nature in the adjoining province of Lakes and the drilling and other equipment will be gradually moved from Wau, in Bahr-el-Ghazal, to Rumbek, the Lakes capital, in the near future where an ambitious drilling and pump installation programme will get under way in 1981 and continue through until 1985 and possibly to 1987.

In South Kordofan where a rather different concept is involved with the hafir rectification programme to be completed, several more years will be required to tackle all those hafirs that have been earmarked for attention, but special heed will be paid to trying to find or devise speedier methods of filtering the water to make it fit for human consumption, but maintaining costs at a reasonable level.

In the health sector, the primary health care programme is occupying a major place in UNICEF's list of priorities but with the benefit of experience, it is now being realised that to expect primary health care unit workers to treat up to 4,000 patients each is quite unrealistic and more community health care

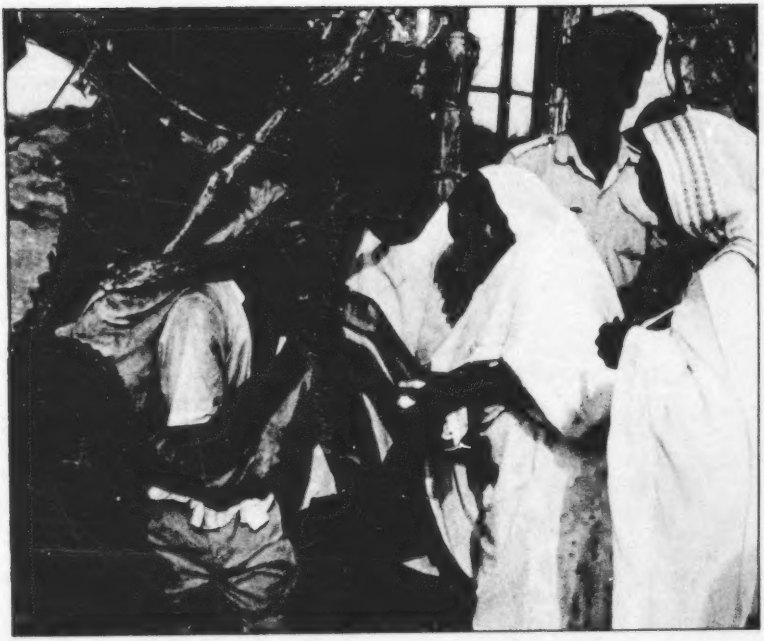
personnel will have to be found and trained so that the number of people to be treated can be reduced to half, if not less, and at the same time it has been appreciated that close supervision is vital to the success of this particular project — and for this UNICEF will have to provide more "wheels"— from four-wheel drive vehicles to mopeds and pedal cycles.

Lack of fuel for motor vehicles has proved a major obstacle to health workers in the remoter areas of the Sudan and although it has always been a rigid rule in UNICEF that consumables such as petrol, oil and tyres are never supplied, it has come to be realised that in the Sudan such a rule will have to be more flexible and where it is necessary fuel will be provided with vehicles so that urgently needed medicines and equipment can be delivered to the places where they are most needed — in most cases the primary health care units far from any hospital.

This strictly practical approach will also be taken as regards traditional birth attendants and efforts will be made to give them very simple and basic lessons so that the work they do is hygienic and effective, and not a health hazard as in the past when such TBAs would smear the end of the umbilical cord after severance with cow dung or other concoctions in the belief that it would be effective in healing the navel.

In many neighbourhoods in the Sudan, the traditional birth attendant is the person who delivers most of the babies and it is therefore logical that every attempt should be made to give a very basic training in hygiene to these TBAs, even if most are illiterate and cannot hope to graduate to become fully-fledged village midwives.

Just what is the answer? In many villages in the remoter parts of the Sudan not one person has ever been to a primary school and the entire population is illiterate. To "import" a fully-trained midwife into such a community would not be the answer, for experience has shown that people will still seek the TBA's help when a baby is to be delivered and so the effort to teach them to take even the simplest precautions against tetanus and blood poisoning is one worth making — and is all part of primary health care in a developing country.

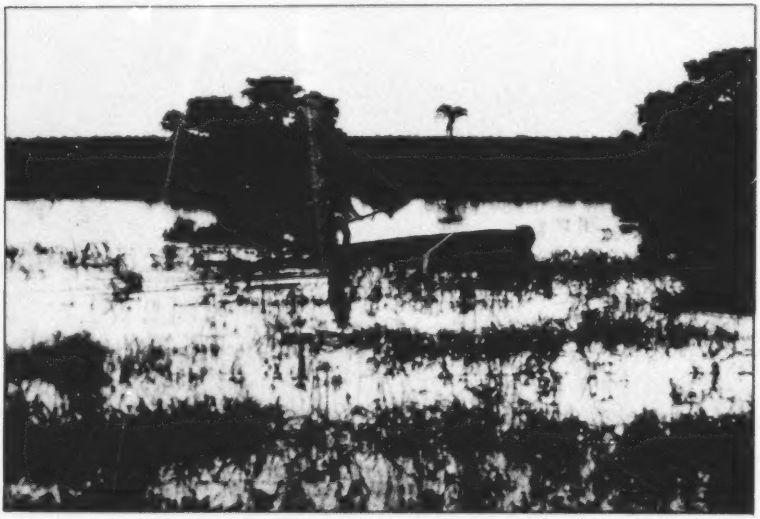


Bowed down with his load, this passenger must submit to the needle before boarding the river steamer. Immunization services are being expanded in the Sudan

Another activity which UNICEF is pledged to support in future is the expansion of Immunization Programme (EIP) to protect young children against the common basic childhood diseases — whooping cough, diphtheria, tetanus, measles, polio and tuberculosis. All can be guarded against with a few simple injections or vaccinations, and while it will probably be some time yet before the necessary "cold chain" for some of the vaccines can be established throughout the Sudan, UNICEF is working with others to form the means by which such deadly diseases can be kept at bay from as many Sudanese children as possible.

But supplementing such immunization methods is the simple remedy of bodily hygiene, and through health education and the availability of clean water, cleanliness can in itself prove to be the best precaution against a whole range of diseases.

A Dinka cattle camp in the dry season looks the picture of desolation as the men dig deep to find water, essential to man and beast alike.



Yet in the long wet season the land is flooded over a vast area and movement by road transport becomes impossible.

A NOTE ON THE SOUTHERN SUDAN

To appreciate the special problems facing the people of the Southern Sudan, it is necessary to consider the predicament of this least-developed part of a developing country as a result of 17 years of civil strife before peace was restored in 1972 with the signing of the Addis Ababa Agreement.

From 1955, the civil disturbance steadily escalated until it became a civil war between the South and the North Sudan, fought wholly in the South where its effects permeated every facet of life. (The Southern Sudan occupies an area the size of the E.E.C. countries, together with Norway and Sweden, or one sixth of the continental United States.)

For the most part enjoying abundant rainfall, the Southern third of the Sudan was well on the way to becoming a prosperous agricultural zone before the outbreak of the civil war, with a flourishing cotton scheme based in Western Equatoria and other cash crops such as coffee, tea and tobacco bringing in steady incomes to the peasant farmers and estate owners, while rice was introduced later and soon became well established.

Before independence in 1956, the development of social services, as well as the provision of educational and medical services by the colonial government lagged behind those in the North, but with the help of missionary societies these were expanded.

Transportation, hindered by the expanse of swampland which effectively cuts off the landlocked Southern Sudan from the North during the lengthy rainy season, depended upon local roads, supplemented by river steamer traffic, but since road communications southward were easier to forge, trade developed between the Southern Sudan and Zaire, Uganda, and later with Kenya, on an increasing scale.

Hostilities brought all these developments to a standstill and while many people fled from the affected areas, or took refuge deep in the bush, those remaining found living conditions extremely difficult, even in the safety of the towns.

Subsistence became the order of the day, with the total collapse of the economy and the obliteration of all social services. Nearly all the schools and dispensaries were destroyed and a whole generation of young Sudanese had little or no schooling during these 17 dark years.

Today, after eight years of autonomy following the accord reached at Addis Ababa which brought an end to the fighting, the South's recovery is far from complete and the cost is still being counted in the disastrous effects which total stagnation has had on the entire population there, who today number more than 3½ million. As many as 90 percent of the people live in the rural areas, where whole communities are inaccessible for many months of the year due to the extensive flooding.

True, during the war some of the population continued with their normal pursuits; the cultivators with their age-old traditional systems of farming and the pastoralists linked closely to their herds of cattle, but content to follow their old ways of animal husbandry and with little or no interest in a cash economy. No advancement of any kind was possible.

With peace restored, the problems for the South in trying to catch up with the rest of the Sudan were of staggering dimensions. After studying the situation closely, a joint mission from UNDP and ILO reached this conclusion in 1955:

> "Development of the South has scarcely begun and it will take the most determined efforts to get it going. Considerations of equity dictate that development expenditure should be increased more rapidly in the South than in other parts of the country. The South itself is too poor to be able to contribute large amounts of its own resources for development. A decision to accelerate development there carries with it the ineluctable conclusion that very substantial support will have to be given from central revenues".

Unfortunately the financial help given to the Southern Sudan did not noticeably improve even after the publication of that grim assessment. The Sudan's 1977/78 Budget saw less than 7 percent allocated to the South, even on paper, and in its annual

report for 1978 UNICEF drew attention to the fact that the Southern Sudan contributed only two percent to the Central Government's revenue and commented that this was "a situation which has no parallel elsewhere in least-developed countries".

The legacy of the 17 years of war has indeed been a costly one and is reflected today in many ways, one of the principal being the chronic shortage of skilled manpower for the many tasks which have to be accomplished if the South is to make any progress.

Almost every government department has the same story to tell — large numbers of vacant posts with no-one to fill them because of lack of qualifications and experience. In agriculture alone, requirements for diploma level personnel in 1979 exceeded 1,500, but only 125 persons with the necessary qualifications could even be found in the records.

About one-third of the posts in the public sector remain unfilled today because of this skill shortage and the situation is especially acute in schools and hospitals where the number of vacancies runs into four figures. No fewer than 1,745 teachers were needed last year to fill primary school vacancies and there were over 1,000 posts for medical assistants and nurses which could not be filled.

The prospects for the immediate future are no brighter, since only 20 students from the South were able to enter the University last year; of the 7,000 graduate posts in 1976, some 100 were filled and the supply is dropping instead of rising.

Health services throughout the South have suffered not only from the war, but also from the fact that they were originally founded on the wrong traditional curative-based approach. Malnutrition is rampant even now and communicable diseases take their toll unchecked and it has not been possible to mount immunization campaigns on any sizeable scale, but in recent years a a number of voluntary agencies and church organisations have been helping to fight disease in some parts of the South.

The main problem is that even now the Southern Sudan has only about 10 percent of the national health service facilities and

Although notorious as a source of many water-borne diseases, the White Nile is a favourite playground for the children of the Southern Sudan.

although primary health care has high priority in the Southern Provinces, it is hampered by the lack in many places of any community spirit of self-help, resulting in few volunteers coming forward as health workers.

Nevertheless, those who come forward for community work are readily trained for their future tasks in nine-month in-service courses which include plenty of practical work. In spite of the lack of much motivation for self-help, many primary health care units and dispensaries have now been built on this basis, some with the co-operation of NGOs.

Even more leeway has to be made up in the field of education, for according to the latest information less than 18 percent of the school-going population of primary age are enrolled in primary grades — far below the 50 percent enrolment of the same age groups for the rest of the Sudan.

The acute shortage of trained teachers, is as much a problem as lack of accommodation and it is also difficult to find teachers fluent in Arabic in the Southern provinces. As it is, well over half of the teachers employed are untrained, but accommodation at teacher training colleges is at a premium and these institutes cannot do much to upgrade those untrained teachers.

52 *(Opposite) Baggara nomad community health worker Badawi el-Radhi on the move.*

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